

Wing 1·96 inch, tail 1·06, tarsus 0·50, culmen 0·38.

Discovered by Mr. A. H. Everett at Monte Alban, in Luzon.

*Oxycerca Everetti*, sp. n.

♂ and ♀. Chin and throat dark brown; breast, flanks, and thigh-coverts warm nutmeg-brown. Abdomen and vent pure white, some of the lower breast-feathers being marked with brown, and some of the flank-feathers being white on their inner webs, brown on their outer, and with white shafts. Under tail-coverts very dark brown or black. Above, wings, and coverts brown, each feather, except the frontal and upper tail-coverts, having a conspicuous pure white central line along the shaft, very prominent on the wing-coverts. Some of the upper tail-coverts tipped with ochre. Rectrices brown, the middle pair broadly margined, the laterals less so, with yellow and greyish yellow. Inner edges of the quills pale rufous seen from underneath.

Wing 1·87 inch, tail 1·75, tarsus 0·56, culmen 0·38.

Several examples of this species were obtained by Mr. A. H. Everett at Monte Alban and San Mateo, in Luzon. The sexes do not differ in plumage. A representative form of *O. leucogaster*.

XIV.—*Report on the Crustacea collected by the Naturalists of the Arctic Expedition in 1875-76.* By EDWARD J. MIERS, F.L.S., F.Z.S., Assistant in the Zoological Department, British Museum.

[Continued from p. 66.]

AMPHIPODA.

*Anonyx nugax*.

*Anonyx nugax*, Phipps, Voy. North Pole, Appendix, p. 192, pl. xii. fig. 2 (1774).

*Gammarus nugax*, Sabine, Append. Capt. Parry's 1st Voy. p. 51 (1821).

*Talitrus nugax*, Ross, Append. Capt. Parry's 3rd Voy. p. 119 (1826); Append. 4th Voy. p. 205 (1828).

*Lysianassa lagena*, Kröyer, Dansk. Vidensk. Selsk. Afh. vii. p. 237, pl. i. fig. 1 ♀ (1838); M.-Edw. Hist. Nat. Crust. iii. p. 21 (1840); Bell in Belcher, 'Last of the Arctic Voyages,' Crust. p. 406 (1855).

*Lysianassa appendiculosa*, Kröyer, l. c. p. 240, pl. i. fig. 2 ♂ (1838).

*Lysianassa appendiculata*, M.-Edw. Hist. Nat. Crust. iii. p. 21 (1840); S. Bate, Cat. Amphip. Crust. Brit. Mus. p. 67, pl. x. fig. 8 ♂.

*Anonyx ampulla*, Kröyer, Nat. Tidsskr. 2 R. i. p. 578 (1844); Voy. en Scand. Atlas, pl. xiii. fig. 2; Brandt, in Middendorff's Sibirische Reise, ii. p. 131 (1851).

*Anonyx lagena*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 77, pl. xii. fig. 7 ♀ (1862); Boeck, Skandin. og Arktiske Amphip. i. p. 152 (1872); Buchholz, Crust. in Koldewey, Zweite, deutsche Nord-polarf. p. 300 (1874).

Coll. Feilden: Floeberg Beach, at 10 fathoms, male and females; fire-hole at lat. 82° 24'; and at lat. 83° 19' at 72 fathoms.

Coll. Hart: Winter quarters of H.M.S. 'Discovery,' at 11 fathoms, two males and four females.

My observations scarcely agree with those of Hr. Buchholz and other authors as regards the rare occurrence of the males of this very common and well-known Amphipod. Of about thirty-six adult specimens collected twelve are undoubtedly males, whereas Hr. Buchholz, after a careful search, found only two examples of this sex in the series obtained by the German expedition. The adult males of this species may generally be distinguished from the females by the far longer flagella of the inferior antennæ, which, when drawn back, reach to the posterior margin of the seventh segment of the body; in the adult females they do not greatly exceed in length the flagella of the superior antennæ, but there are male examples in which this character is less strongly marked. I have not observed any marked differences in the two sexes in the form of the segments of the body and appendages. The length of the largest male, from lat. 83° 19' N. is 1½ inch (38 millims.); of the largest female, from Floeberg Beach, nearly 1 inch 9 lines (44 millims.).

This species is one of the commonest and most abundantly distributed of the Amphipoda inhabiting the high northern latitudes; it is said by Ross, in Parry's 3rd Voyage (*l. c.*), to be "by far the most numerous of the Crustacea inhabiting the Arctic Seas;" and it is, as has been already stated, of especial interest as being the only species obtained at lat. 83° 19' N., the most northerly point attained by the Expedition at which animals were collected.

Its range extends along the shores of Arctic America; and it occurs in the White Sea and on the coasts of Greenland, Iceland, Spitzbergen, Norway, and Britain, and in the sea of Okhotsk.

*Anonyx gulosus?* Pl. III. fig. 2.

*Anonyx gulosus*, Kröyer, Nat. Tidsskr. 2 R. i. p. 611 (1844-45); in Gaimard, Voy. en Scand. Atlas, Crust. pl. xiv. fig. 2; Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 370 (1862); Boeck, Skand. og Arktiske Amphip. p. 157, pl. v. fig. 4 (1872).

*Anonyx norvegicus*, Lilljeborg, Öfv. Kongl. Vet. Akad. Förhandl. 1851, p. 22.

? *Anonyx Holbölli*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 75, pl. xii. fig. 4 (1862).

Three specimens were collected by Mr. Hart, from the largest of which the following description is taken:—

The body (for one of the group to which this species belongs) is not robust, and is everywhere distinctly punctulated. The head is subacute, but not produced at its antero-lateral angle. The segments of the postabdomen have their antero-lateral angles rounded; and the second and third segments have their postero-lateral angles acute, but not reflexed; the fourth and fifth segments have their posterior margins entire. The eyes are visible, but almost colourless. The superior antennæ in the adult are about half as long as the inferior, and the first (exposed) joint is longer than the second and third taken together; the first joint of the flagellum is about as long as the three following; the accessory flagellum 6-7 jointed, the first joint not much longer than the succeeding. The last two joints of the peduncle of the inferior antennæ are of about equal length, these antennæ are less than half the length of the body of the animal. The first pair of legs are slender and rather long, the wrist and palm subequal, each more than twice as long as broad; the palm not narrowed, but very slightly enlarged towards its distal extremity, which is obliquely truncated, and armed with a series of minute stiff hairs and longer cilia; the finger arcuate and with a subapical tooth; the second pair of legs is long and very feeble, the palm ovate and ciliated on the margins, with a very small finger. The coxa of the fourth pair of legs is not wider at its proximal extremity than that of the preceding pair, but about twice as wide at its distal extremity; the posterior margin is deeply excavated. The basa of the last three pairs of legs are ovate-oblong, those of the last pair rather the broadest at base. The rami of the appendages of the fourth to sixth segments of the postabdomen are subequal and acute. The terminal segment (telson) is more than twice as long as broad at base, narrowing slightly distally, cleft nearly to its base, the apex of each lobe notched at its outer angle, the notch bearing a single cilium. Colour whitish with greenish spots, which are most distinct upon the coxæ and bases of the legs. Length of the largest specimen a little over 1 inch (26 millims.).

Coll. Hart: winter quarters of H.M.S. 'Discovery,' at a depth of 11 fathoms.

I have referred the specimens collected by Mr. Hart with some doubt to the *Anonyx gulosus* of Kröyer, as the antero-lateral margin of the head is less broadly rounded, and the accessory flagellum is longer than that of *A. gulosus* according to Boeck's diagnosis. In the form of the first and second pairs of legs and of the terminal segment they agree well with the descriptions of *A. gulosus*, and particularly in the presence of a tooth on the inner margin of the dactyl, which is mentioned by Lilljeborg as characteristic of that species. From *A. pumilus* they differ in the shorter antennæ, and in the absence of a tooth on the posterior margin of the fifth post-abdominal segment.

*Anonyx gulosus* has been recorded from Greenland, Spitzbergen, Iceland, the coasts of Scandinavia, and Britain.

*Onesimus Edwardsii*. Pl. III. fig. 3.

*Anonyx Edwardsii*, Krøyer, Naturh. Tidsskr. 2 R. ii. pp. 1, 41 (1846);

Voy. en Scand. Crust. Atlas, pl. xvi. fig. 1.

*Lysianassa Edwardsii*, Goës, Œf. Vet. Ak. Förhandl. p. 520 (1865).

*Onesimus Edwardsii*, Boeck, Forhandl. Vidensk. Selsk. Christiania, p. 113 (1871); Skandin. og Arktiske Amphip. ii. p. 167, pl. vi. fig. 4 (1876).

Coll. Feilden : Discovery Bay, at  $5\frac{1}{2}$  fathoms, lat.  $81^{\circ} 44'$ , one specimen; Floeberg Beach, at 10 fathoms, males and females, abundantly.

The eyes in the specimens that I refer to this species are large, red, and subreniform when present; but are in some specimens scarcely distinguishable, and in others entirely absent. The first joint of the flagellum of the superior antennæ is short, not exceeding in length the two or three following joints taken together, or even less, and not quite equalling in length the first joint of the accessory flagellum. In the first pair of legs the palm is but little longer than the wrist and obliquely truncate; the second pair of legs has a short, distally enlarged and truncated palm and small arcuate finger in both sexes. The third joint of the last three pairs of legs is not dilated, the fifth joint a little shorter than the two preceding taken together; the rami of the last pair of uropoda are very short, about as long as the terminal segment. The antero-lateral angle of the head is considerably produced anteriorly. The third segment of the postabdomen is slightly produced upward and subacute at its postero-lateral angle; the terminal segment is broadly semi-oval, with a raised marginal line, very slightly emarginate at its distal extremity, but without a median fissure. The whole animal is coarsely punctulated.

Of this species adult examples of both sexes were collected; of sixteen specimens from Floeberg Beach, in spirits, six are males. Of the females, one example only bears ova. Length of the largest male nearly 10 lines (21 millims.); of the largest female 11 lines ( $23\frac{1}{2}$  millims.).

The specimens collected differ from Boeck's diagnosis in one particular; the third segment of the postabdomen is slightly produced upward at the postero-lateral angle. Nothing is said of the form of this segment by Krøyer in his description of the species or in the Latin diagnosis that follows. In Krøyer's figure of the species in the Atlas of the 'Voyage en Scandinavie,' the postero-lateral angle of this segment is represented as not produced upward, but acute. There is, however, a manifest inconsistency between the diagnosis of Boeck and the figures in the Atlas referred to; *e.g.* in *Onesimus plautus* the third postabdominal segment is described by Boeck as "sursum productus acutus," but figured by Krøyer as broadly obtuse and rounded at the postero-lateral angle.

*Onesimus Edwardsii* has been recorded from Greenland, Spitzbergen, and Britain.

*Atylus carinatus*.

*Gammarus carinatus*, Fabr. Ent. Syst. ii. p. 515 (1793).

*Atylus carinatus*, Leach, Zool. Miscell. iii. p. 22, pl. lxi. (1815); M.-Edw. Hist. Nat. Crust. iii. p. 68 (1840); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 134, pl. xxv. figs. 1-3 (1862); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 357, pl. x. (1874); Boeck, Skandinaviske og Arktiske Amphipoder, ii. p. 324 (1876).

*Amphithoë carinata*, Krøyer, Kongl. Dansk. Vidensk. Selsk. Afh. vii. p. 256, pl. ii. fig. 6 (1838); Voy. en Scand. Atlas, Crust. pl. xi. fig. 1; M.-Edw. Hist. Nat. Crust. iii. p. 41 (1800).

Coll. Feilden: Discovery Bay, at depths of  $5\frac{1}{2}$  and 25 fathoms.

In the adult males of this species, at least in such specimens as I have observed, the body is slender, the palm of the first pair of legs more elongate and narrowed distally, and the lobes of the terminal segment narrower and separated by a wider and deeper fissure. The length of the specimen (a male) obtained at 25 fathoms depth (the only one which, being preserved in spirits, could be accurately measured) is 1 inch 1 line (nearly 28 millims.).

*Atylus carinatus* occurs on the coasts of Greenland and Spitzbergen and in Davis Straits.

*Acanthozone hystrix*.

*Acanthosoma hystrix*, Owen & Ross, Append. Ross's 2nd Voy. Zool. Crust. p. xci, pl. B. fig. 4 (1835); Bell, in Belcher's 'Last of the Arctic Voyages,' Crust. p. 406 (1855).

*Amphithoë hystrix*, Krøyer, Kongl. Danske Vidensk. Selsk. Afh. vii. pl. ii. figs. 6 & 7 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 40 (1840).

*Paramphithoë hystrix*, Bruzelius, Kongl. Vet. Akad. Handl. iii. p. 71 (1859); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 147, pl. xxviii. fig. 1 (1862).

*Acanthozone cuspidata*, Boeck, Forhandl. Vidensk. Selsk. p. 184 (1870); Skandin. og Arktiske Amphip. p. 229 (1876),  *nec* Lepechin.

*Acanthozone hystrix*, Miers, Ann. & Mag. Nat. Hist. (ser. 4) xix. p. 137 (1877).

Coll. Feilden: Discovery Bay, one specimen; Franklin-Pierce Bay, two specimens.

Coll. Hart: Franklin-Pierce Bay, 13-15 fathoms, three specimens.

Two of the specimens collected are adult males, another is an adult female. The length of the largest specimen from Franklin-Pierce Bay slightly exceeds 1 inch 2 lines (30 millims.).

In the elaborate plate that illustrates this species in the 'Zweite deutsche Nordpolarf.' (*l. c.*) the rostral spine is represented as conical, straight, and acute, and the basos joint of the sixth and seventh pairs of legs as armed with four strong spines upon its posterior margin. In all the specimens of both sexes that I have examined the rostral spine is laterally compressed and bent near its base, projecting horizontally forwards, and there are but two spines upon

the posterior margins of the basos joint of the sixth and seventh pair of legs.

It is probable, therefore, that a distinct species is figured by Buchholz in the plate referred to.

This species has been recorded from the shores of Arctic America (Felix Harbour, Igloolik), Greenland, Spitzbergen, Finmark, and Norway.

*Halirages fulvocinctus.*

*Amphithoë fulvocincta*, Sars, Forhandl. Vidensk. Selsk. Christiania, p. 141 (1858); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 381 (1862).

*Pherusa tricuspis*, Stimpson, Proc. Ac. Nat. Sci. Phil. p. 133 (1863).

*Paramphithoë fulvocincta*, Goës, Œfv. Vet. Akad. Förhandl. p. 525, fig. 15 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 367 (1874).

*Halirages fulvocinctus*, Boeck, Forhandl. Vidensk. Selsk. Christiania, p. 196 (1870); Skandinaviske og Arktiske Amphipoder, ii. p. 342, pl. xxiii. fig. 11 (1876).

Coll. Feilden: Discovery Bay, at 25 fathoms, one specimen; Floeberg Beach, one specimen.

Both of the specimens collected are in an imperfect condition: one is, I believe, an adult female; the other is a younger animal. The length of the larger specimen (that collected in Discovery Bay) is about  $10\frac{1}{2}$  lines (20 millims.).

*Halirages fulvocinctus* has been recorded from the coasts of Greenland, Spitzbergen, and Finmark.

*Gammarus locusta.*

*Cancer locusta*, Linn. Syst. Nat. ed. 12, p. 1055 (1766).

*Gammarus locusta*, Fabr. Ent. Syst. ii. p. 516 (1793); Leach, Trans. Linn. Soc. xi. p. 359 (1815); M.-Edw. Hist. Nat. Crust. iii. p. 44 (1840); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 206, pl. xxxvi. fig. 6 (1862); Spence Bate and Westwood, Hist. Brit. Sessile-Eyed Crust. i. p. 378 (1863); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 343 (1874); Boeck, Skandinav. og Arktiske Amphipoder, ii. p. 366 (1876).

*Gammarus arcticus*, Leach, in Scoresby, Account of Arctic Regions, i. p. 541, pl. xvi. fig. 14 (1820).

*Gammarus boreus*, Sabine, Append. Capt. Parry's 1st Voy. p. 51 (1821); Ross, Append. Capt. Parry's 3rd Voy. Crust. p. 119 (1826); Append. Parry's 4th Voy. p. 204 (1828); Ross & Owen, Crust. in Append. Ross's 2nd Voy. p. lxxxviii (1835); Bell, Crust. in Belcher's 'Last of the Arctic Voyages,' p. 405 (1855).

*Gammarus Duebeni*, Lilljeborg, Œfv. Kongl. Vet. Ak. Förhandl. p. 22 (1851).

*Gammarus mutatus*, Lilljeborg, Kongl. Vet. Ak. Handl. p. 447 (1853).

*Gammarus sitchensis*, Brandt, Crust. in Middendorff's Sibirische Reise, ii. p. 137 (1851).

Coll. Feilden: Floeberg Beach, at depth of 10 fathoms, twenty-five specimens; crack between the floes in lat.  $82^{\circ} 24'$ , three specimens.

Of sixteen adult, or nearly adult, specimens from Floeberg Beach, which, being preserved in spirit, could be accurately examined, ten are males. Of the six females, all but one carried a number of young animals beneath the lamelliform ciliated plates developed from the inner side of the first five pairs of legs. In the younger animals these plates are present, but much less markedly developed, being slender and substyliform.

The length of the largest male is 1 inch 4 lines (34 millims.), that of the largest female about 1 inch 2½ lines (31 millims.). The hands of the first and second pairs of legs (gnathopoda) are much more powerful in the male than in the female: the palm of the second pair in the female is of a suboblong shape; in the male it is ovate, and narrowed towards the distal extremity, like that of the first pair of legs.

This very common species probably occurs upon the coasts of all the circumpolar region of the globe. In Europe its range extends southward to the Mediterranean and the Black Sea.

*Gammaracanthus loricatus*.

*Gammarus loricatus*, Sabine, Append. Capt. Parry's 1st Voy. p. 53, pl. i. fig. 7 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 118 (1826); Append. Parry's 4th Voy. p. 204 (1828); Ross & Owen, Crust. in Append. Ross's 2nd Voy. p. lxxxix (1835); Krøyer, Kongl. Dansk. Vid. Selsk. vii. p. 250, pl. i. fig. 4 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 52 (1840); Bell in Belcher's 'Last of the Arctic Voyages,' Crust. p. 405 (1855).

*Gammaracanthus loricatus*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 202, pl. xxxvi. fig. 2 (1862); Boeck, Skandinav. og Arktiske Amphipoder, ii. p. 400 (1876).

Coll. Feilden: Floeberg Beach, at 10 fathoms, two males and two females.

The two males collected are much smaller than the females. Length of largest male nearly 1 inch 6 lines (38 millims.), of largest female about 1 inch 11 lines (49 millims.).

*Gammaracanthus loricatus* is found upon the shores of Arctic America (Port Bowen, Prince Regent's Inlet) and Scandinavia; also in lakes of the latter-mentioned region and of Finland, and at Greenland and Spitzbergen and in the White Sea.

. *Amathilla pinguis*.

*Gammarus pinguis*, Krøyer, Kongl. Dansk. Vidensk. Selsk. vii. p. 252, pl. i. fig. 5 (1838); M.-Edw. Hist. Nat. Crust. iii. p. 50 (1840).

*Amathia pinguis*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 200 (1862).

*Amathilla pinguis*, Boeck, Vidensk. Selsk. Forhandl. p. 218 (1870); Skandinav. og Arktiske Amphip. ii. p. 411 (1876); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 353, pl. ix. fig. 2 (1874).

Coll. Feilden: Crack between floes at lat. 82° 24', one specimen. The single specimen collected has been dried, and is in an im-

perfect condition. There can, however, be no doubt about its identification. Length  $\frac{1}{2}$  inch (about 13 millims.).

This species is found upon the coasts of Greenland and Spitzbergen.

*Eusirus cuspidatus*.

*Eusirus cuspidatus*, Kröyer, Nat. Tidsskr. 2 R. i. p. 501, pl. vii. fig. 1 (1844-45); Voy. en Scand. Crust. Atlas, pl. xix. fig. 2; Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 154, pl. xxviii. figs. 6, 7 (1862); Goës, Cefv. Vet. Ak. Förh. p. 529 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 313, pl. iii. fig. 12 (1874); Boeck, Skandin. og Arktiske Amphip. ii. p. 502 (1876).

Coll. Hart: Franklin-Pierce Bay, 13-15 fathoms, one female specimen.

The single example in the collection is fully adult and bears ova. Length 1 inch  $7\frac{1}{2}$  lines (41 millims.).

The basos joint of the sixth and seventh pairs of legs is considerably narrowed to its distal extremity. The second and third segments of the abdomen have the posterior margins rounded and very finely serrated. This species has been described at great length and figured by Buchholz, *l. c.*; but either the figure is carelessly executed as regards many details, or it represents a very distinct species. The rostrum is represented as much longer than in the specimens I have seen, the coxa of the fourth pair of legs with its inferior margin straight (not rounded as in the examples I have examined), the second and third segments of the postabdomen with the posterior margins strongly angulated, &c.

This species has been found at Greenland, Spitzbergen, Finmark, and Norway.

*Tritropis aculeata*.

*Oniscus aculeatus*, Lepechin, Acta Acad. Sci. Petropolitana, p. 247, pl. viii. fig. 1 (1780).

*Talitrus Edwardsii*, Sabine, Append. x. in Capt. Parry's 1st Voy. p. 54, pl. ii. figs. 1-4 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 119 (1826); Append. Capt. Parry's 4th Voy. p. 209 (1828).

*Amphithoë Edwardsii*, Owen & Ross, Crust. in Append. Ross's 2nd Voy. p. xc (1835); Kröyer, Voy. en Scand. Atlas, Crust. pl. x. fig. 1.

*Amphithonotus Edwardsii*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 151, pl. xxviii. fig. 5 (1862).

*Amphithonotus aculeatus*, Goës, Cefv. Vet. Akad. Förhandl. p. 526 (1865); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 316, pl. iv. (1874).

*Tritropis aculeata*, Boeck, Forh. Vid. Selsk. p. 158 (1870); Skand. og Arktiske Amphipoder, p. 511 (1876).

Coll. Feilden: Discovery Bay, at 25 fathoms, one male, four females; Cape Napoleon, at 25 fathoms, three males, seven females; Floeberg Beach, at 10 fathoms, two males, five females; Franklin-Pierce Bay, at 15 fathoms, thirteen specimens (dried).

Coll. Hart: Franklin-Pierce Bay, 13-15 fathoms, twelve females;



Cape Fraser, 20 fathoms, three young females (?); Dobbin Bay, at 30 fathoms, one female.

About fifty specimens in all were collected of this species, of which only six are males. The length of the largest male is 1 inch 5 lines (36 millims.), that of the largest female, a specimen bearing ova, nearly 1 inch 9 lines (44 millims.).

None of the females in the collection carry any young animals; but the greater number have ova in a greater or less degree of development. In the youngest females in the collection, from Cape Napoleon, length 1 inch  $\frac{1}{2}$  line, in which no ova are present, the ovigerous lamellæ are small, much smaller than the branchial leaflets, but they are rapidly developed, and become ciliated as the animal increases in age; in the largest females, with fully ripened ova, they considerably exceed the branchial lamellæ in size, and completely infold and conceal the ova. These latter at first present the appearance of a whitish mass scarcely a line in length, but when ripe are of a reddish- or orange-yellow colour, and completely fill the cavity beneath the pereionial segments.

This species is one of the commonest of the Amphipoda inhabiting the northern seas. It has been found, often in great abundance, on the shores of Arctic America (Port Bowen, Igloolik), Greenland, Spitzbergen, Finmark, and in the White Sea.

*Ægina spinosissima.*

- Ægina spinosissima*, Stimpson, Syn. Invert. Grand Manan, p. 44 (1853).  
*Caprella spinifera*, Bell, in Belcher's 'Last of the Arctic Voyages,' ii. p. 407, pl. xxxv. fig. 2 (1855); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 338 (1874).  
 ? *Ægina echinata*, Boeck, Forh. Skand. Nat. p. 670 (1860); Vidensk. Selsk. Forh. p. 271 (1870); Skand. og Arktiske Amphip. ii. p. 680, pl. xxxviii. fig. 6 (1876).  
*Caprella spinosissima*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 361, pl. lvii. fig. 3 (1862).

Coll. Feilden: Cape Napoleon, 25 fathoms, temperature of water 29°·2, one small male specimen.

Coll. Hart: Dobbin Bay, 30 fathoms, one large male specimen.

The largest specimen, length nearly 2 inches 2 lines (54 millims.), is very robust, of a green colour, and with but very few small spines and many indistinct very small tubercles; the second pair of legs has the hand armed upon its inferior margin with two very strong teeth, and a third small tooth close to the distal extremity; the finger is strong and very much curved; the first joint of the first pair of postabdominal appendages is short and much broader than the second joint.

The smaller specimen, length a little over 11 lines (24 millims.), is of a whitish colour, purplish brown at the bases of the spines, which are numerous, especially on the back. The hand of the second pair of legs is nearly of the same form as in the preceding, but the finger is less arcuate; the basal joint of the second pair of legs not broader than the second joint.

In the specimens I have before me the teeth on the inferior margin of the palm of the second pair are not only much larger than in *Æ. echinata*, but the palm itself is not tuberculated as in that species, as figured by Boeck (*l. c.*). It is possible that the two forms are distinct; but the variation in the spines of the body and its limbs are known to be very great in some species of the genus.

Probably the specimens referred by Ross in Parry's 3rd and 4th Voyages to *Caprella scolopendroides*, and which he describes as having "a great number of small spines along the back," should be referred to *Æ. spinosissima*. They were collected at Port Bowen and Low Island.

This species has been recorded from the coasts of Greenland, Spitzbergen, and Norway; and if, as I believe, the species of Stimpson is identical, from the Grand Manan at the entrance of the Bay of Fundy.

## ENTOMOSTRACA v. GNATHOPODA.

### PHYLLOPODA.

#### BRANCHIPODIDÆ.

*Branchipus (Branchinecta) arcticus*. Pl. IV. fig. 1.

*Branchipus (Branchinecta) arcticus*, Verrill, Amer. Journ. Sci. & Arts, ser. 2, xlvi. p. 253 (1869).

*Branchinecta arctica*, Packard, in Hayden, U.S. Geol. & Geogr. Survey, p. 621 (1874); Amer. Naturalist, xi. p. 53 (1877).

Coll. Hart: Discovery Bay, in a small freshwater lake and in a stream under ice.

Several specimens were collected, including males and females, of a species of Phyllopoda, which I refer to the *B. arcticus* of Verrill. Of these species I have only seen the descriptions in the journals above quoted, not having been able to meet with Verrill's full Report on the American Phyllopoda in the volume for 1869 of the American Association for the Advancement of Sciences and Arts. These specimens possess the elongated claspers, with serrated basal joints, and elongated egg-pouches of the species of *Branchinecta*, and are distinguished from the *Branchipus paludosus* of Müller, also from Greenland (if his figure in the 'Zool. Danica,' pl. xlvi. be correct), by the much shorter lanceolate caudal appendages. In *B. paludosa* these are represented as very slender, acuminate, and half as long as the abdomen.

These specimens differ slightly from the descriptions of *B. arcticus* and *grœnlandicus*, as will appear from the following description. If distinct (which may be possible, although I think it more probable that the three forms are varieties of one and the same species), the species may be designated *B. Verrilli*.

The antennæ are slender, linear, and nearly as long as the basal joint of the claspers. The large prehensile antennæ, or "claspers," as they are called by Verrill, are nearly half as long as the

body, two-jointed, the basal joint as long as the second, nearly straight, and of the same thickness throughout, with a not very prominent rounded lobe at the distal extremity on the inner side; this, and the distal half of the inner margin, armed with a series of ten or a dozen small teeth or spines. The second joint is smooth, slightly tapering to its distal extremity and concave on its inner surface. The branchial feet are eleven in number, and the lobes on the inner margin are beautifully fringed with long, close, flexible hairs; the fifth and sixth pairs are the longest; and the others decrease regularly in size. The vesicular body is narrow oblong-oval; the terminal lobe of the second joint is regularly oval in shape. The caudal appendages lanceolate, small; margins with slender setae, which become longer as they approach the distal extremity. The specimens are smaller than that collected by Dr. Packard, averaging only 12 millims. in length.

Verrill's specimens of this species were from Labrador; and if, as is thought possible both by Packard and Verrill, this species be not distinct from the *B. grœnlandicus* and *B. coloradensis*, it must have a very extended geographical range.

Specimens of *B. grœnlandicus* are mentioned by Packard as having been obtained during the late American expedition of the 'Polaris' at Polaris Bay, between lat. 81° 20' and 81° 50'.

#### COPEPODA.

##### LERNÆOPODIDÆ.

##### *Lernæopoda arcturi*, sp. n. Pl. IV. fig. 2.

Coll. Feilden: Floeberg Beach, parasitic on the gills of *Salmo arcturus*, Gthr.

On the new charr collected by Capt. Feilden, and recently described by Dr. Günther, were many specimens of a parasitic Lernæoid crustacean, which I cannot certainly identify with any previously recorded, and of which the following is a description:—

The cephalothorax is narrow-ovate, nearly or quite as long as the abdomen, which is ovate, turgid on its dorsal surface, and smooth, there being no trace of articulations or of the tubercles which are so characteristic of *Basanistes huchonis*; the ovaries are about as long as the abdomen. The oral aperture is circular and not prominent. The inner antennæ are very small and apparently two-jointed. The outer antennæ are stout, broad at base; the terminal joint is produced on its inner side into an ovate lobe, which is ciliated on the margins, and bears on its outer side a two-jointed accessory appendage, the terminal joint of which is conical and acute; hence the outer antennæ appear bifid at the extremity; the palpi at the base of these organs are very small.

The first pair of maxillipeds are robust; the basal portion is stout, and tapers slightly towards the distal extremity, the terminal joint is much slenderer, and bears at its extremity a small ungui-

form lobe. The second pair of maxillipeds are cylindrical and about as long as the cephalothorax, with a thickened marginal rim at the distal extremities, which are united, and terminate in a large membranous conical *bulla*, which is imbedded in the body of the animal to which the parasite adheres.

The nearest ally of this species is evidently the *Lernæopoda Edwardsii* of Olsson, Acta Universit. Lund., p. 36 (1868), from Norway, from which it differs in the somewhat shorter ovaries and abdomen and the form of the claw of the first maxilliped. This species has not been figured; and a comparison of specimens might prove the *L. arcturi* to be identical with it. From the *L. carpionis* of Krøyer, to which it is also nearly allied, it differs in the form of the *bulla* of the second maxilliped, &c.; from the *L. salmonæ* of Mayor (Bull. Soc. Philom. p. 24, 1824), which Olsson, who had not seen Mayor's original description, considers synonymous with his *L. Edwardsii*, but which is probably a different species, in the smooth abdomen, and, if Milne-Edwards's figure be correct, in the form of the head, ovaries, &c.

The *Achtheres Carpenteri*, described by A. S. Packard, junr., from a trout in the East River, Colorado (Rep. U. S. Geol. and Geogr. Survey, 1874, p. 612), to judge from the outline figure which accompanies the very brief description, resembles this species. The abdomen, however, is said to possess indications of division into three segments, which are not indicated in the figure.

## CIRRIPIEDIA.

### BALANIDÆ.

#### *Balanus porcatus.*

*Balanus porcatus*, Da Costa, Hist. Nat. Test. Brit. p. 249 (1778); Darwin, Monogr. Cirripedia, Balanidæ, p. 256, pl. vi. fig. 4 (1854); Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 396 (1874).

Coll. Feilden: Cape Napoleon, from a depth of 50 fathoms, five specimens, 25 fathoms, two specimens; Richardson Bay, 80° 2' N. lat., 70 fathoms, one specimen.

Coll. Hart: Franklin-Pierce Bay, 13-15 fathoms.

The largest specimen collected has a greatest height of rather over 1 inch 1 line (28 millims.), and greatest diameter of nearly 1 inch 2 lines (29 millims.). The specimens from Cape Napoleon agree well with *B. porcatus* in the sharply and strongly ribbed parietes of the shell, the radii of which are parallel to the base, and in the characters of the opercular valves. The small specimen from Richardson Bay, height 7 lines (15 millims.), greatest diameter 6 lines (nearly 13 millims.), I was at first inclined to think might be *B. crenatus*, on account of the very oblique and narrow radii; but the characters of the opercular valves are those of *B. porcatus*,

the apex of the terga being produced and acute, and the spur placed close to the basiscutal angle.

This species occurs on the coasts of Greenland, Iceland, Spitzbergen, Norway, Finmark, and Britain—also on the shores of Maine and Massachusetts, and perhaps at China (see Darwin, *l. c.*)

## PYCNOGONIDA.

### NYPHONIDÆ.

#### *Nymphon hirtum*.

? *Nymphon hirtum*, Fabr. Ent. Syst. iv. p. 417 (1794); Krøyer, Nat. Tidsskr. 2 R. i. p. 113 (1844-45); Voy. en Scand. Atlas, Crust. pl. xxxvi. fig. 3; Buchholz, Crust. in Koldewey, Zweite deutsche Nordpolarf. p. 397 (1874).

*Nymphon hirsutum*, Sabine, Append. Capt. Parry's 1st Voy. no. x. p. 48 (1821); Ross, Append. Capt. Parry's 3rd Voy. p. 117 (1826); Append. Parry's 4th Voy. p. 203 (1828).

*Nymphon hirtipes*, Bell, in Belcher's 'Last of the Arctic Voyages,' Crust. p. 401, pl. xxxv. fig. 3 (1855).

Coll. Feilden: Franklin-Pierce Bay, five specimens; Discovery Bay, one specimen; Floeberg Beach, at depth of 10 fathoms, two specimens.

Coll. Hart: Franklin-Pierce Bay, 13-15 fathoms, three specimens.

I have referred the specimens collected with some doubt to *N. hirtum*, as in Krøyer's figure of that species not only is the animal represented as much slenderer, but also the chelæ of the mandibles have the fingers much shorter and scarcely denticulated on their inner margins. In the specimens before me the fingers are very slender, somewhat curved at the tips, and armed with a row of spinules on their inner margins. In some examples the immobile finger is shorter than the other, as in the form to which Bell (*l. c.*) has assigned the name of *N. hirtipes*, which does not otherwise differ from the present species, except in the absence of hairs upon the segments of the body, and can hardly be regarded as distinct from it.

Fourteen specimens in all were collected of this species; of these, two are adult females with ova. Length of largest specimen about  $6\frac{1}{2}$  lines (14 millims.), greatest length between tips of legs when extended nearly 3 inches 3 lines (82 millims.); of the largest ova-bearing female, nearly 6 lines (12 millims.), greatest length between legs 2 inches 11 lines (74 millims.).

In the males of this species the whole animal is more robust, the joints of all the legs, as stated by Buchholz (*l. c.*), thicker and more compressed; in the females the second joint of the legs is proportionally longer than in the males. I may add that in the two ova-bearing females in the collection the fifth joint of the third (ovigerous) pair of appendages is dilated and geniculated near its distal

extremity, the angle being armed with a tuft of stiff hairs, which evidently serve as points of attachment for the ova. It is probable that this peculiarity of structure only attains its greatest development in females in which the ova are present.

This species appears to be a common inhabitant of the high northern latitudes, and has been recorded from the coasts of Greenland, Spitzbergen, and Arctic America (Port Bowen, Northumberland Sound).

*Nymphon hirtum*, var. *obtusidigitum*. Pl. IV. fig. 3.

Among the specimens from Franklin-Pierce Bay is a single example, which differs from the males of the foregoing variety only in the legs being cylindrical, not dilated and compressed, and in the form of the chelæ of the mandibles. These have the fingers arcuate, meeting only at the tips, which terminate in small knobs. The chelæ are slender, not globose, as in the form figured by Bell, in Belcher (*l. c.*) p. 409, pl. xxxv. fig. 4, under the name of *N. robustum*, and that recently described by Heller as *N. hians* (Sitz. der k.-k. Akad. Wien, Naturw. lxxi. p. 610, 1875), in which species the fingers although arcuate are represented as acute. The second joint of the legs is short, as in the males of *N. hirtum*. Length rather more than 5 lines (11 millims.); greatest width between legs about 2 inches 7 lines (66 millims.).

*Nymphon Strömii*.

*Nymphon Strömii*, Kröyer, Nat. Tidsskr. 2 R. i. p. 111 (1844); Voy. en Scand. Crust. Atlas, pl. xxxv. fig. 3.

Coll. Feilden: Floeberg Beach, lat. 82° 27', at depth of 10 fathoms, three specimens, and at lat. 81° 56', one specimen; Cape Fraser, at a depth of 80 fathoms, bottom hard, one adult and three young specimens.

One (the largest) specimen collected is a female with ova; length 6½ lines (16 millims.), greatest width between legs 5 inches 6 lines (140 millims.). All the specimens obtained are more or less imperfect.

The examples obtained by Captain Feilden of this fine species agree in all respects with the figure given by Kröyer in the Atlas of Gaimard's 'Voyage en Scandinavie,' above quoted. The female (at least the example I have examined) has not the peculiar dilatation of the fifth joint of the third pair of appendages noted in the female of *N. hirtum*.

This species is usually (as stated by Kröyer *l. c.*) glabrous; but in one or two specimens there are a few scattered hairs upon the legs. The chelæ in the adult are very large, with long fingers armed with spines upon their inner margins; the third and fourth joints of the second pair of appendages are subequal and together much longer than the second joint; the seventh joint of the legs is long and slender, a little longer than the eighth joint.

Kröyer gives Norway, with doubt, as the habitat of his specimens of this species.

## EXPLANATION OF THE PLATES.

## PLATE III.

- Fig. 1. *Arcturus baffini*, var. *Feildeni*; natural size.  
 Fig. 2. *Anonyx gulosus*?, slightly enlarged: *a*, head and antennæ (lateral view); *b*, maxilliped; *c*, *d*, hands of first and second pairs of legs; *e*, end of postabdomen, showing the form of the third segment; *f*, terminal segment and last pair of uropoda; all much enlarged.  
 Fig. 3. *Onesimus Edwardsii*, slightly enlarged: *a*, head and antennæ (lateral view); *b*, maxilliped; *c*, *d*, hands of first and second pairs of legs; *e*, end of postabdomen, showing form of third segment (lateral view); *f*, terminal segment and last two pairs of uropoda; all much enlarged.

## PLATE IV.

- Fig. 1. *Branchipus (Branchinecta) arcticus*, greatly enlarged: *a*, one of the large prehensile antennæ; *b*, one of the branchial feet; *c*, caudal appendages; all still further enlarged.  
 Fig. 2. *Lernæopoda arcturi*, greatly enlarged: *a*, outer antennæ; *b*, first maxilliped; further enlarged.  
 Fig. 3. *Nymphon hirtum*, var. *obtusidigitum*, natural size: *a*, mandible; *b*, *c*, one of the appendages of the first and second pairs; enlarged.

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XV.—*Descriptions of new Species of Heteropterous Hemiptera collected in the Hawaiian Islands by the Rev. T. Blackburn.*  
 —No 1. By F. BUCHANAN WHITE, M.D., F.L.S.

## Cydnidæ.

*Geotomus subtristis*, n. sp.

*G. subovatus*, piceo-niger, subnitidus, pronoti margine postico, scutelli apice, pedibus antennisque piceis, harum articulorum apicibus et toto articulo ultimo, necnon tarsis piceo-luteis; membrana sordide albida, apicem abdominis paullo superante. Marginibus capitis et lateralibus thoracis paucis pilis sat longis ciliatis. Capite obtusiuscule rotundato, margine antico subreflexo, lobis lateralibus parce punctulatis, lobo centrali ad apicem haud angustato; antennarum articulo secundo quam tertius paullo brevior, tertio, quarto, quintoque subæquilongis, duobus ultimis fusiformibus. Pronoto antice et ad latera irregulariter rudeque punctato; disco lævi, fovea parva in medium, et pone medium fovea majore rude punctata utrinque instructo; lobo postico 5 vel 6 rugis transversis plus minus punctulatis instructo; angulis posterioribus lævibus